

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

112740-177

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/806594

INTERNATIONAL APPLICATION NO.
PCT/DE99/03055INTERNATIONAL FILING DATE
23 September 1999PRIORITY DATE CLAIMED
30 September 1998

TITLE OF INVENTION

METHOD FOR CONNECTING EXCHANGES VIA A PACKET-ORIENTED COMMUNICATION NETWORK

APPLICANT(S) FOR DO/EO/US

Wolfgang Fraas et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☒ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

Submission of Drawings - Figs 1-3 on three sheets

U.S. APPLICATION NO. (IF KNOWN SEE 37 CFR <div style="font-size: 2em; font-weight: bold; margin-top: 5px;">097806594</div>		INTERNATIONAL APPLICATION NO. PCT/DE99/03055		ATTORNEY'S DOCKET NUMBER 112740-177	
---	--	---	--	--	--

21. The following fees are submitted:. BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <div style="margin-top: 5px;"> <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,000.00 <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00 <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00 <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 </div> <div style="text-align: right; margin-top: 5px;"> ENTER APPROPRIATE BASIC FEE AMOUNT = </div>				CALCULATIONS PTO USE ONLY	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				\$860.00 \$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	6 - 20 =	0	x \$18.00	\$0.00	
Independent claims	1 - 3 =	0	x \$80.00	\$0.00	
Multiple Dependent Claims (check if applicable) . <input type="checkbox"/>				\$0.00	
TOTAL OF ABOVE CALCULATIONS =				\$860.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable) . <input type="checkbox"/>				\$0.00	
SUBTOTAL =				\$860.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				\$0.00	
TOTAL NATIONAL FEE =				\$860.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00	
TOTAL FEES ENCLOSED =				\$860.00	
				Amount to be: refunded	\$
				charged	\$

☒ A check in the amount of **\$860.00** to cover the above fees is enclosed.

☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees.
 A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **02-1818** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

William E. Vaughan
Bell, Boyd & Lloyd LLC
P.O. Box 1135
Chicago, IL 60690-1135

SIGNATURE
William E. Vaughan
 NAME
39,056
 REGISTRATION NUMBER
March 30, 2001
 DATE

09/806594

JC10 Rec'd PCT/PTO 3 0 MAR 2001

BOX PCT

IN THE UNITED STATES ELECTED OFFICE
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER THE PATENT COOPERATION TREATY-CHAPTER II

5

PRELIMINARY AMENDMENT

APPLICANTS: Wolfgang Fraas et al. ATTORNEY DOCKET NO.: 112740-177
SERIAL NO.:

INTERNATIONAL APPLICATION NO: PCT/DE99/03055

10 INTERNATIONAL FILING DATE: 23 September 1999

INVENTION: METHOD FOR CONNECTING EXCHANGES VIA A
PACKET-ORIENTED COMMUNICATION NETWORK

Assistant Commissioner
15 Patent and Trademark Office
Washington, D.C. 20231

S I R:

Please amend the above-identified International Application before entry
20 into the National stage before the U.S. Patent and Trademark Office under 35
U.S.C. § 371 as follows:

In The Specification:

On page 1, cancel lines 1-4, and substitute therefor

--SPECIFICATION

25

TITLE

**METHOD FOR CONNECTING EXCHANGES VIA A
PACKET-ORIENTED COMMUNICATION NETWORK**

BACKGROUND OF THE INVENTION

Field of the Invention

30

The present invention relates to a method for connecting exchanges via a
packet-oriented communication network which permits voice data to be
transmitted via a packet-oriented communication network without any loss of the
voice quality.

Description of the Prior Art--

On page 1, line 19, cancel "are" and substitute therefor --is--.

On page 1, line 24, cancel "by means of" and substitute therefor --via--.

On page 1, line 25, cancel the "--" and substitute therefor a --,--.

5 On page 1, line 26, cancel "are" and substitute therefor --is--.

On page 1, line 27, cancel "are" and substitute therefor --is--.

On page 1, line 32, cancel the "--" and substitute therefor a --,--.

On page 1, line 33, cancel the "--" and substitute therefor a --,--.

On page 1, line 33, cancel the "are" and substitute therefor --is--.

10 On page 1, line 33, cancel "these" and substitute therefore --this--.

On amended page 2, line 1, cancel "need" and substitute therefor
--needs--.

On amended page 2, line 6, cancel "said" and substitute therefor --wherein
the--.

15 On amended page 2, line 7, cancel "being" and substitute therefor --is--.

On amended page 2, line 7, insert a --,-- after "and".

On amended page 2, line 7, insert a --,-- after "hence".

On amended page 2, line 7, cancel "being".

On amended page 2, line 20, insert --present-- before --invention--.

20 On amended page 2, line 20, cancel "below" and substitute therefor --,
therefore,--.

On amended page 2, cancel lines 25-26 and substitute the following
therefore:

--SUMMARY OF THE INVENTION

25 Accordingly, the present invention is directed to a method for connecting
exchanges via a packet-oriented communication network, wherein data
transmission involves data packets subdivided into substructure elements, and the
connecting exchanges are connected to the packet-oriented communication
network via respective conversion device, the method including the steps of:
30 transmitting, via a transmitting one of the connecting exchanges, data to be
transmitted as substructure elements to an associated transmitting conversion

device; inserting, via the transmitting conversion device, the substructure elements into data packets unchanged; extracting, via a receiving conversion device associated with a receiving one of the connecting exchanges, the substructure elements from the received data packets; and forwarding the extracted substructure elements to the receiving one of the connecting exchanges unchanged.--

On amended page 2, line 29, insert --present-- before "invention".

On amended page 2, cancel lines 35-36.

On amended page 2a, line 1, cancel "One" and substitute therefor --Another--.

On amended page 2a, line 1, cancel "of refinements".

On amended page 2a, line 1, insert --present-- before "invention".

On amended page 2a, lines 1-3, cancel "which are defined in the dependant claims is, amongst other things, and substitute therefor --, pursuant to an alternative embodiment, is--.

On page 3, line 1, cancel "of refinements".

On page 3, line 1, insert --present-- before "invention".

On page 3, lines 1-2, cancel "which are defined in the dependent claims" and substitute therefor --, pursuant to yet another embodiment,--.

On page 3, cancel lines 10-12 and substitute the following therefor:

--Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Preferred Embodiments and the Drawings.

DESCRIPTION OF THE DRAWINGS--

On page 3, line 22, insert --and-- after the ";".

On page 3, before line 28, insert the following centered heading:

--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--

On page 3, line 30, cancel "by means of" and substitute therefor --via--.

On page 5, line 11, cancel "This means that" and substitute therefor "As such,--.

On page 5, lines 15-16, cancel "the figure" and substitute therefor --
Figure 2--.

On page 5, line 35, cancel "can".

On page 5, line 35, insert --can-- after "also"

5 On page 5, line 36, cancel "plurality" and substitute therefor --number--.

On page 5, line 36, cancel "The figure" and substitute therefor
--Figure 2--.

On page 5, line 36, insert --this-- after "shows".

On page 5, line 37, cancel "[Lacuna]".

10 On page 5a, line 4, cancel the ", " after "Se" and substitute therefor a --.--.

On page 5a, line 4, cancel "which means that" and substitute therefor --As
such--.

On page 6, line 11, cancel "This" and substitute therefor --Thus, this--.

On page 6, line 11, cancel "thus".

15 On page 6, line 16, cancel "are" and substitute therefor --is--.

On page 7, line 11, cancel "are" and substitute therefor --is--.

On page 7, line 12, cancel "are" and substitute therefor --is--.

On page 7, after line 14, insert the following paragraph:

20 --Although the present invention has been described with reference to
specific embodiments, those of skill in the art will recognize that changes may be
made thereto without departing from the spirit and scope of the invention as set
forth in the hereafter appended claims.--

On page 10 (last page), cancel all lines of the text and substitute the
following therefor:

25 **--ABSTRACT OF THE DISCLOSURE**

A method for connecting exchanges via a packet-oriented communication
network wherein the exchanges are connected via a respective conversion device
to the packet-oriented communication network, in which data transmission
involves data packets subdivided into substructure elements being set up. For
30 data transmission, the conversion device associated with a transmitting exchange
inserts the substructure elements into the data packets, and a conversion device

associated with the receiving exchange separates the substructure elements from the data packets.--

In the Claims

On page 8, cancel line 1 and substitute the following left-hand justified
5 heading therefor:

--We Claim as Our Invention--

Please cancel claims 1-6, without prejudice, and substitute the following claims therefor:

7. A method for connecting exchanges via a packet-oriented
10 communication network, wherein data transmission involves data packets subdivided into substructure elements, and the connecting exchanges are connected to the packet-oriented communication network via a respective conversion device, the method comprising the steps of:

transmitting, via a transmitting one of the connecting exchanges, data to
15 be transmitted as substructure elements to an associated transmitting conversion device;

inserting, via the transmitting conversion device, the substructure elements into data packets unchanged;

extracting, via a receiving conversion device associated with a receiving
20 one of the connecting exchanges, the substructure elements from the received data packets; and

forwarding, via the receiving conversion device, the extracted substructure elements to the receiving one of the connecting exchanges unchanged.

25 8. A method for connecting exchanges via a packet-oriented communication network as claimed in claim 7, wherein the data packets are structured as Internet Protocol data packets.

9. A method for connecting exchanges via a packet-oriented communication network as claimed in claim 7, the method further comprising the steps of:

storing, via a respective cell header of a substructure element, a channel
5 identifier for denoting assignment of the substructure elements to a transmission destination; and

storing, via the respective cell header, an item of length information for indicating a number of useful data segments transmitted in the substructure element.

10

10. A method for connecting exchanges via a packet-oriented communication network as claimed in claim 7, wherein the substructure elements are structured on the basis of an Asynchronous Transfer Mode data format in accordance with an agreement known as second ATM adaptation layer AAL
15 Type 2.

11. A method for connecting exchanges via a packet-oriented communication network as claimed in claim 7, wherein for data transmission, the substructure elements are arranged in a useful data area of a data packet such that
20 a substructure element starts in a segment defined as first useful data segment of the data packet.

12. A method for connecting exchanges via a packet-oriented communication network as claimed in claim 8, the method further comprising the
25 step of:

defining a pointer, in a segment defined as first useful data segment of an Internet Protocol data packet, which is used to denote a start address of a first substructure element situated in a useful data area of the Internet Protocol data packet.

REMARKS

5 The present amendment makes editorial changes and corrects
typographical errors in the specification in order to conform the specification to
the requirements of the United States Patent practice. No new matter is added
thereby. Original claims 1-6 has been canceled in favor of new claims 8-12.
10 Claims 8-12 have been presented solely because the revisions by bracketing and
underlining which would have been necessary in claims 1-6 in order to present the
claim in accordance with preferred United States Patent practice would have been
too extensive, and thus would have been too burdensome. The amendment is
intended for clarification purposes only and not for substantial reasons related to
15 patentability pursuant to 35 U.S.C. §§101, 102, 103 or 112. Indeed, the
cancellation of claims 1-6 does not constitute an intent on the part of the
Applicants to surrender any of the subject matter of claims 1-6.

Early consideration on the merits is respectfully requested.

15

Respectfully submitted,

 (Reg. No. 39,056)

William E. Vaughan
Bell, Boyd & Lloyd LLC
20 70 West Madison Street, Suite 3300
Chicago, Illinois 60602
(312) 807-4292
Attorneys for Applicants

GR 98 P 2837

Description

Method for connecting exchanges via a packet-oriented communication network

5

Increasing global orientation of companies means that the use of telecommunication services for transmitting voice and data is constantly increasing. The result of this is that the costs caused by these
10 telecommunication services are constantly rising and become a considerable cost factor for the companies, which therefore seek opportunities to reduce these costs. One opportunity for being able to transmit data inexpensively and on a worldwide basis is afforded by
15 global computer networks, such as the Internet.

The US patent application with the official file reference 08/942,592 has already proposed a method and an arrangement which enable data which are to be
20 transmitted within the context of a voice link to be transmitted via a packet-oriented communication network, such as the Internet. To this end, the exchanges involved in a voice link are connected to the Internet by means of a respective Internet access
25 unit - frequently called Telephony Internet Server TIS in the literature. In this case, the data which are to be transmitted within the context of a voice link are transmitted on the basis of the RTP protocol (Realtime Transport Protocol) in accordance with ITU-T Standard
30 H.225.0 (International Telecommunication Union).

If compressed voice data - as used for mobile radio, for example - are transmitted, then these compressed voice data need to be decompressed in the Internet
35 access unit, converted into the packet-oriented data format based on the RTP protocol and then compressed again for transmission at the transmitter end before transmission. Furthermore,

at the receiver end, the data need to be decompressed, converted into the original data format and then compressed again for further transmission. This frequent compression/decompression of the voice data results in corruption of the originally transmitted voice data at the receiver end, said corruption sometimes being audible and hence being perceivable as interference.

10 It is an object of the invention below to specify a method which permits voice data to be transmitted via a packet-oriented communication network without any loss of the voice quality.

15 The invention achieves the object by means of the features of patent claim 1.

A fundamental advantage of the method according to the invention is that, by subdividing the data packets set up for data transmission via the packet-oriented communication network into so-called substructure elements, data assigned to different destinations can be transmitted within one data packet.

25 Advantageous developments of the invention are specified in the dependent claims.

One advantage of refinements of the invention which are defined in the dependent claims is, amongst other things, that the transmission of an individually settable number of useful data bytes, assigned to a voice link, in a substructure element of a data packet enables data to be transmitted at a variable transmission rate. This permits the use of compression algorithms which produce a variable data stream from a continuous data stream on the basis of the redundancy which exists in the data to be transmitted without corrupting the information.

Another advantage of refinements of the invention which are defined in the dependent claims is that defining the first useful data segment of a data packet as a pointer which denotes the start address of a first
5 substructure element situated in the useful data area of the data packet provides a simple way of synchronizing the exchanges when one or more data packets are lost.

10 An illustrative embodiment of the invention is explained in more detail below with the aid of the drawing, in which:

Figure 1 shows a structogram for schematically
15 illustrating two exchanges connected via a packet-oriented communication network;

Figure 2 shows a structogram for schematically
20 illustrating IP data packets subdivided into substructure elements, on the basis of a first conversion mode;

Figure 3 shows a structogram for schematically
25 illustrating IP data packets subdivided into substructure elements, on the basis of a second conversion mode.

Figure 1 is a schematic illustration showing two exchanges PBX connected to an IP-oriented (Internet
30 Protocol) communication network IP-KN by means of a respective conversion unit UE. Examples of data networks in which IP protocols are preferably used are the so-called Ethernet based on IEEE Standard 802.3, or the so-called Token Ring based on IEEE Standard 802.5
35 (Institute of Electrical and Electronics Engineers). The conversion units UE are used, firstly, for connecting the exchanges PBX to the IP-oriented communication network IP-KN, and secondly, for bidirectional conversion

between the exchange-internal data format and the data format of the IP-oriented communication network IP-KN.

In this case, exchange-internal data transmission and switching take place on the basis of substructure elements SE having the ATM data format (Asynchronous Transfer Mode) in accordance with the so-called ATM adaptation layer AAL Type 2 (ATM Adaptation Layer). In this context, the ATM adaptation layer AAL is used for adapting the ATM data format to the network layer (Layer 3) of the OSI reference model (Open System Interconnection).

Bidirectional conversion between the data format divided into substructure elements SE and the IP-oriented data format is performed by the conversion units UE on the basis of two different conversion modes, which are explained in more detail below.

Figure 2 shows a schematic illustration of IP data packets IP-P subdivided into substructure elements SE, on the basis of a first conversion mode. An IP data packet IP-P is made up of a packet header H and a useful data field having a variable length of 1 - 65 536 bytes. The packet header H essentially stores switching data, such as the destination address and the origin address of an IP data packet IP-P.

A substructure element SE is made up of a cell header SH with a length of 3 bytes and a useful data area I of variable length (0 to 64 bytes). The cell header of a substructure element SE is in turn subdivided into a channel identifier CID (Channel Identifier) with a length of 8 bits, a length identifier LI (Length Indicator) with a length of 6 bits, a transmitter/receiver identifier UUI (User-to-User Indication) with a length of 5 bits and a cell header checksum HEC (Head Error Control) with a length of 5

[illegible]

- 4a -

bits. The channel identifier CID provides the option to assign a substructure element SE to a

particular connection via the IP-oriented communication network IP-KN, and hence to transmit data assigned to different connections in one IP data packet.

- 5 On the basis of the first conversion mode, the substructure elements SE are inserted into the useful data field of an IP data packet IP-P such that the first byte of the useful data field is occupied by a cell header SH of a substructure element SE, and the
- 10 last byte of the useful data field concludes with the last byte of a substructure element SE. This means that the length of the useful data field of an IP data packet IP-P is chosen such that one or more substructure elements SE are transmitted completely in
- 15 one IP data packet IP-P. By way of example, in the figure, two substructure elements SE1, SE2 are transmitted completely in a first IP data packet IP-P, and one substructure element SE3 is transmitted in a second IP data packet IP-P.
- 20 In case one or more IP data packets IP-P have gone missing, e.g. as a result of a transmission error, the length identifier LI of the first substructure element SE transmitted in the useful data field of an IP data
- 25 packet IP-P can be used for synchronization between the transmitter and the receiver, since this length identifier LI can determine the position of other substructure elements SE which may be arranged in the useful data field.
- 30 Figure 3 shows a schematic illustration of IP data packets IP-P subdivided into substructure elements SE, on the basis of a second conversion mode. On the basis of the second conversion mode, substructure elements SE
- 35 can also be split over useful data fields of a plurality of IP data packets IP-P. The figure shows [lacuna] by way of example for the substructure element

[illegible]

of transmitter and receiver by the length identifier LI of a substructure element SE is no longer possible.

For this, the first byte of the useful data field of an
5 IP data packet IP-P is defined as a pointer Z. Thus,
the substructure elements SE are transmitted only upon
the second byte of the useful data field of an IP data
packet IP-P. This pointer Z indicates the start address
10 SH is in the useful data field of an IP data packet
IP-P. This pointer Z can thus be used to restore the
synchronization between transmitter and receiver.

Within the context of data transmission from a
15 transmitting exchange PBX to a receiving exchange PBX,
the data to be transmitted are transmitted to the
conversion unit UE associated with the exchange PBX by
the transmitting exchange PBX in the form of
substructure elements SE. In the conversion unit UE,
20 the substructure elements SE are inserted into data
packets IP-P on the basis of the first or second
conversion mode, the packet header H of the data
packets IP-P containing the IP address of the
conversion unit UE associated with the receiving
25 exchange PBX. The data packets IP-P are then
transmitted via the IP-oriented communication network
IP-KN to the conversion unit UE associated with the
receiving exchange PBX. This conversion unit UE
extracts the substructure elements SE contained in the
30 received data packets IP-P and forwards the extracted
substructure elements SE to the receiving exchange PBX.

Transmission of data combined into substructure
elements SE on the basis of the ATM adaptation layer
35 AAL Type 2 via the IP-oriented communication network
IP-KN dispenses with bidirectional conversion between

[illegible][illegible][illegible]

10

Patent claims

1. A method for connecting exchanges (PBX) via a packet-oriented communication network (IP-KN),
5 in which data transmission involves data packets (IP-P) subdivided into substructure elements (SE) being set up, and the exchanges (PBX) are connected to the packet-oriented communication network (IP-KN) by means of a respective
10 conversion device (UE),
where a transmitting exchange (PBX) transmits the data to be transmitted in the form of substructure elements (SE) to its associated conversion device (UE), which inserts the substructure elements (SE)
15 into data packets (IP-P), and
where the conversion device (UE) associated with a receiving exchange (PBX) extracts the substructure elements (SE) from the received data packets (IP-P) and forwards the extracted substructure
20 elements (SE) to the receiving exchange (PBX).
2. The method as claimed in claim 1,
characterized
in that the data packets (IP-P) are structured as
25 IP data packets (Internet Protocol).
3. The method as claimed in one of the preceding claims,
characterized
30 in that the substructure elements (SE) each have a cell header (SH)
which stores a channel identifier (CID) for denoting assignment of the substructure elements (SE) to a transmission destination, and
35 which stores an item of length information (LI) for indicating the number of useful data segments

GR 98 P 2837

- 8a -

transmitted in a substructure element (SE).

2025-12-15 14:00:00

4. The method as claimed in one of the preceding claims,
characterized
in that the substructure elements (SE) are
5 structured on the basis of the ATM data format
(Asynchronous Transfer Mode) in accordance with an
agreement known as second ATM adaptation layer AAL
Type 2 (ATM Adaptation Layer).
- 10 5. The method as claimed in one of the preceding
claims,
characterized
in that, for data transmission, the substructure
elements (SE) are arranged in a useful data area
15 of a data packet (IP-P) such that a substructure
element (SE) starts in a segment defined as first
useful data segment of the IP data packet (IP-P).
- 20 6. The method as claimed in one of claims 1 to 4,
characterized
in that, in a segment defined as first useful data
segment of an IP data packet (IP-P), a pointer (Z)
is defined which is used to denote the start
address of the first substructure element (SE)
25 situated in the useful data area of an IP data
packet (IP-P).

[illegible]

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	---

[illegible][illegible][illegible]

at the receiver end, the data need to be decompressed, converted into the original data format and then compressed again for further transmission. This frequent compression/decompression of the voice data results in corruption of the originally transmitted voice data at the receiver end, said corruption sometimes being audible and hence being perceivable as interference.

10 In addition, laid-open specification GB-A-2 320 396 discloses a method for transmitting voice data via a packet-oriented communication network in which data produced in the form of IP data packets are converted into AAL-2 data packets at the transmitter end for data transmission via the packet-oriented communication network. However, converting the IP data packets into AAL-2 data packets likewise suffers impairment of the voice quality.

20 It is an object of the invention below to specify a method which permits voice data to be transmitted via a packet-oriented communication network without any loss of the voice quality.

25 The invention achieves the object by means of the features of patent claim 1.

A fundamental advantage of the method according to the invention is that, by subdividing the data packets set up for data transmission via the packet-oriented communication network into so-called substructure elements, data assigned to different destinations can be transmitted within one data packet.

35 Advantageous developments of the invention are specified in the dependent claims.

One advantage of refinements of the invention which are defined in the dependent claims is, amongst other things, that the transmission of an individually
5 settable number of useful data bytes, assigned to a voice link, in a substructure element of a data packet enables data to be transmitted at a variable transmission rate. This permits the use of compression algorithms which produce a variable data stream from a
10 continuous data stream on the basis of the redundancy which exists in the data to be transmitted without corrupting the information.

Patent claims

1. A method for connecting exchanges (PBX) via a packet-oriented communication network (IP-KN),
5 in which data transmission involves data packets (IP-P) subdivided into substructure elements (SE) being set up, and the exchanges (PBX) are connected to the packet-oriented communication network (IP-KN) by means of a respective
10 conversion device (UE),
where a transmitting exchange (PBX) transmits the data to be transmitted in the form of substructure elements (SE) to its associated conversion device (UE), which inserts the substructure elements (SE)
15 into data packets (IP-P) unchanged, and
where the conversion device (UE) associated with a receiving exchange (PBX) extracts the substructure elements (SE) from the received data packets (IP-P) and forwards the extracted substructure
20 elements (SE) to the receiving exchange (PBX) unchanged.

1/3

Fig 1

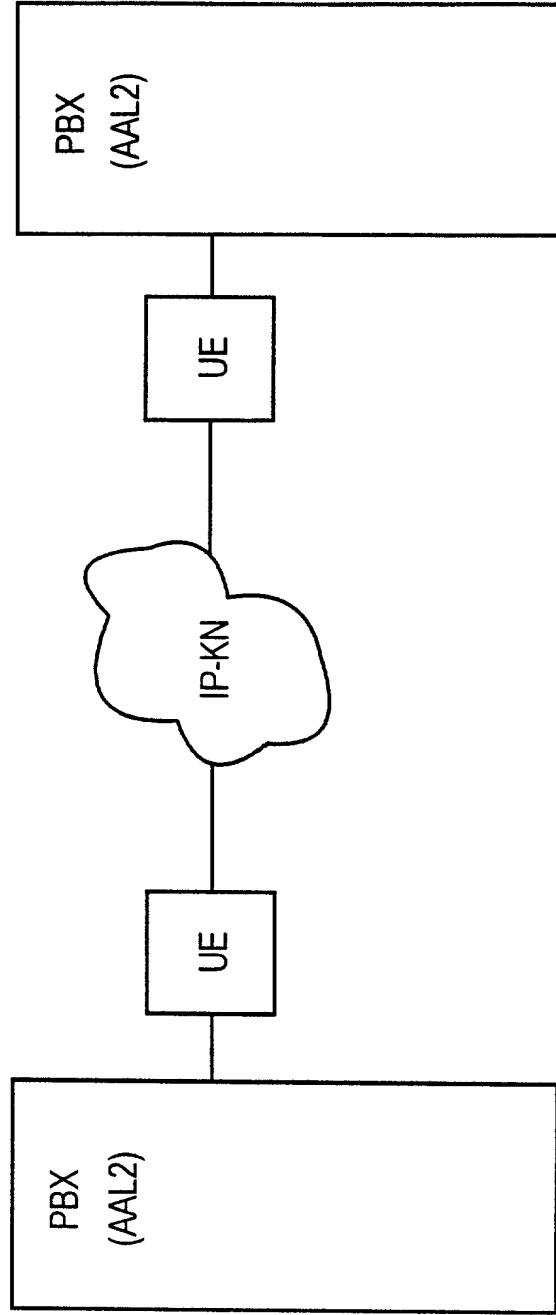


Fig 2

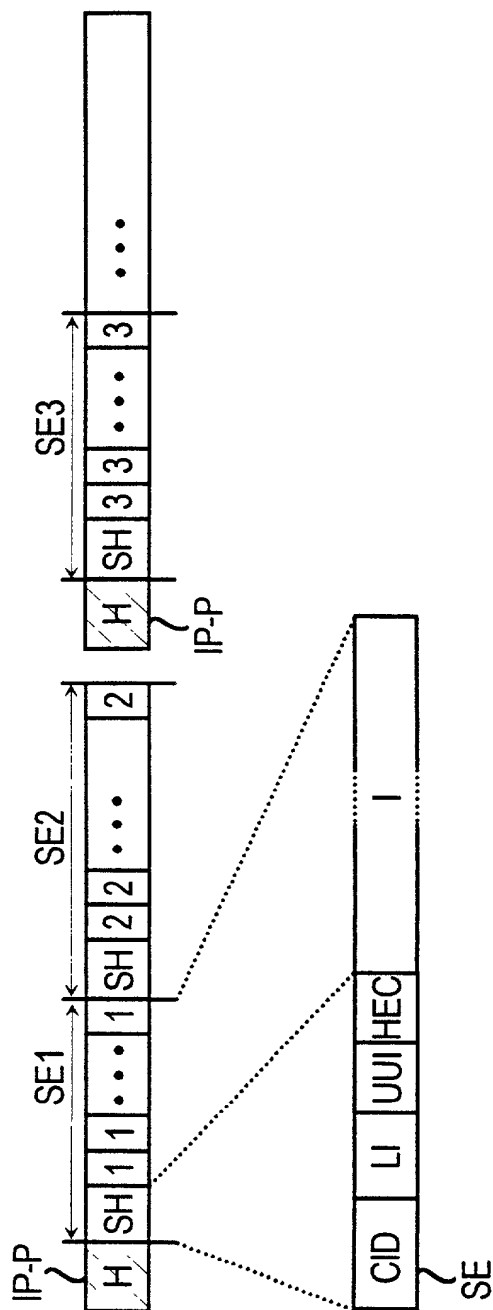
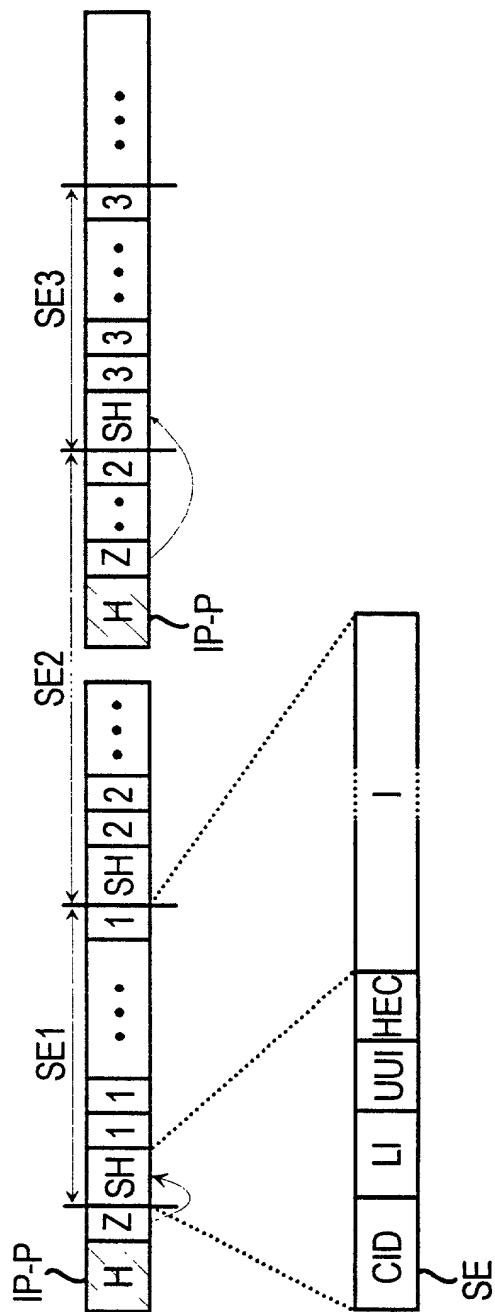


Fig 3



Declaration and Power of Attorney For Patent Application

Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

Verfahren zum Verbinden von
Vermittlungsanlagen über ein paket-
orientiertes Kommunikationsnetz

deren Beschreibung

(zutreffendes ankreuzen)

☐ hier beigefügt ist.

☒ am 23. September 1999 als
PCT internationale Anmeldung
PCT Anwendungsnummer PCT/DE99/03055
eingereicht wurde und am _____
abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

the specification of which

(check one)

☐ is attached hereto.

☐ was filed on _____ as

PCT international application

PCT Application No. _____

and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Declaration and Power of Attorney For Patent Application

Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

Verfahren zum Verbinden von
Vermittlungsanlagen über ein paket-
orientiertes Kommunikationsnetz

deren Beschreibung

(zutreffendes ankreuzen)

☒ hier beigefügt ist.

☐ am _____ als

PCT internationale Anmeldung

PCT Anmeldungsnummer _____

eingereicht wurde und am _____

abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obige ☐ Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

the specification of which

(check one)

☐ is attached hereto.

☐ was filed on _____ as

PCT international application

PCT Application No. _____

and was amended on _____

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

German Language Declaration

Prior foreign applications
Priorität beansprucht

Priority Claimed

198 45 031.1 Germany

30. September 1998



(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

Yes
Ja

No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)



Yes
Ja

No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)



Yes
Ja

No
Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date)
(Anmeldedatum)

(Status)
(patentiert, anhängig,
aufgegeben)

(Status)
(patented, pending,
abandoned)

(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date)
(Anmeldedatum)

(Status)
(patentiert, anhängig,
aufgeben)

(Status)
(patented, pending,
abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden können, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

German Language Declaration

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt: (Name und Registrationsnummer anführen)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

And I hereby appoint

Messrs. William E. Vaughan (Reg. No. 39,056); Robert M. Barrett (Reg. No. 30,142); Michael S. Leonard (Reg. No. 37,557); Patricia A. Kane (Reg. No. 46,446); Thomas C. Basso (Reg. No. P46,541); Robert W. Connors (Reg. No. P46,442); Troy A. Groetren (Reg. No. 46,442); Adam H. Masia (Reg. No. 35,602); Dante J. Picciano (Reg. No. 33,543); Amy J. Gast (Reg. No. 41,773); Timothy L. Harney (Reg. No. 38,174); Renato L. Smith (Reg. No. 45,117); and Alan L. Barry (Reg. No. 30,819)

Telefongespräche bitte richten an:
(Name und Telefonnummer)

Direct Telephone Calls to: (name and telephone number)

(312) 807-4292
Ext. _____

Postanschrift:

Send Correspondence to:

William E. Vaughan
Bell, Boyd & Lloyd
P.O. Box 1135
Chicago, IL 60690-1135

Voller Name des einzigen oder ursprünglichen Erfinders: WEHREND, Klaus	Full name of sole or first inventor: _____
Unterschrift des Erfinders Datum <i>Klaus Wehrend</i> 01-03-02	Inventor's signature Date _____
Wohnsitz D-82223 Eichenau, Germany	Residence _____
Staatsangehörigkeit Bundesrepublik Deutschland	Citizenship _____
Postanschrift Eichenstr. 1	Post Office Address _____
D-82223 Eichenau Bundesrepublik Deutschland	_____
Voller Name des zweiten Miterfinders (falls zutreffend): FRAAS, Wolfgang	Full name of second joint inventor, if any: _____
Unterschrift des Erfinders Datum <i>W. Fraas</i> 01-02-21	Second Inventor's signature Date _____
Wohnsitz D-82515 Wolfratshausen, Germany	Residence _____
Staatsangehörigkeit Bundesrepublik Deutschland	Citizenship _____
Postanschrift Karwendelstr. 2	Post Office Address _____
D-82515 Wolfratshausen Bundesrepublik Deutschland	_____

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).

FOUO 100-465303-60

[illegible]

Voller Name des dritten Miterfinders:		Full name of third joint inventor:	
HÜNLICH, Klaus			
Unterschrift des Erfinders	Datum	Inventor's signature	Date
<i>Klaus Hünlich</i>	01.02.21		
Wohnsitz		Residence	
D-85467 Neuching, Germany			
Staatsangehörigkeit		Citizenship	
Bundesrepublik Deutschland			
Postanschrift		Post Office Address	
Birkenstr. 4			
D-85467 Neuching			
Bundesrepublik Deutschland			
Voller Name des vierten Miterfinders (falls zutreffend):		Full name of fourth joint inventor, if any:	
Unterschrift des Erfinders	Datum	Inventor's signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	
Voller Name des fünften Miterfinders (falls zutreffend):		Full name of fifth joint inventor, if any:	
Unterschrift des Erfinders	Datum	Inventor's signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	
Voller Name des sechsten Miterfinders (falls zutreffend):		Full name of sixth joint inventor, if any:	
Unterschrift des Erfinders	Datum	Inventor's signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).